

IN THE CLAIMS

Please amend Claims 1-4, and 25 as follows:

1. (currently amended) A chuck assembly for holding a sample comprising:

a shaft;

a generally circular chuck member, said shaft extending from a first surface of said chuck member, the chuck member having first fluid passages through the chuck member, the first fluid passages directing a fluid in a fluid flow through the chuck and toward the sample, the chuck member having second fluid passages through the chuck member, the second fluid passages directing the fluid away from the sample;

a sample holder associated with a second surface of said chuck member, said second surface being opposite said first [[a]] surface, said sample holder being disposed to hold the sample with a predetermined surface of the sample in a predetermined orientation relative to said fluid flow directed by said chuck member toward the sample; and

a sample receiving assembly for holding the sample on the sample holder so that the sample remains fixed to the sample holder with the predetermined surface in the predetermined orientation when the shaft rotates and causes said chuck member and sample holder to rotate with the shaft.

2. (currently amended) The apparatus of Claim 1 wherein said [[chuck member has]]second fluid passages

comprise, are located at a periphery of the chuck member, and form means for propelling ~~[[a]]~~ the fluid.

3. (currently amended) The apparatus of Claim 1 wherein said chuck member is generally shaped as a squat cylinder, and said ~~[[chuck member has]]~~second fluid passages comprise a plurality of grooves, said grooves extending along an outer surface of said cylinder, said grooves being at an acute angle with respect to a longitudinal axis of said chuck member.

4. (currently amended) The apparatus of Claim 3 wherein said ~~[[chuck member has]]~~first fluid passages have a plurality of openings extending ~~[[there]]~~through the chuck member in a direction parallel to a longitudinal axis of said chuck member.

5. (original) The apparatus of Claim 4 in combination with:

a reactor chamber for receiving said chuck assembly;

a spindle assembly for receiving an end of said shaft distal from said chuck member; and

a motor for rotating said spindle assembly and said shaft so that said fluid flows generally along said shaft in a first direction and through said openings in said chuck member around said sample holder and then along a wall of said chamber in a second direction generally opposite to said first direction.

6. (original) The apparatus of Claim 5 wherein said chamber is cylindrical and said fluid flows along a wall of said chamber in said second direction.

7. (original) The apparatus of Claim 5 further comprising:

a first opening through which a reaction fluid is introduced into said chamber; and

a second opening through which said reaction fluid is removed from said chamber.

8. (original) The apparatus of Claim 7 wherein said first opening is disposed proximate said shaft and said second opening is disposed proximate the wall of said chamber.

9. (original) The apparatus of Claim 5 further comprising:

temperature control means for controlling the temperature of said reactor chamber.

10. (original) The apparatus of Claim 9 wherein said temperature control means comprises:

a mantle surrounding said reactor chamber; and

a controller for controlling the temperature of said mantle.

11. (original) The apparatus of Claim 9 wherein said temperature control means controls the temperature of said reactor chamber so that said reactor chamber is at a temperature of between 0°C and 150°C.

12. (original) The apparatus of Claim 1 wherein said sample receiving assembly comprises at least one clip for holding the sample to said sample holder.

13. (original) The apparatus of Claim 12 wherein said sample holder has a plurality of through holes formed therein.

14. (original) The apparatus of Claim 13 wherein at least one of said through holes receives a fastener for securing said clip to the sample holder.

15. (original) The apparatus of Claim 5, further comprising:

pressurizing apparatus for pressurizing said reactor chamber.

16. (original) The apparatus of Claim 15 wherein said pressurizing apparatus pressurizes said chamber to a pressure of up to 10,000 psi.

17. (original) The apparatus of Claim 15 wherein said pressurizing apparatus comprises a compressed gas cylinder.

18. (original) The apparatus of Claim 15 wherein said pressurizing apparatus includes a high pressure pump.

19. (original) The apparatus of Claim 5 wherein said fluid is supercritical carbon dioxide.

20. (original) The apparatus of Claim 19 wherein said fluid further comprises an organic solvent.

21. (original) The apparatus of Claim 1 wherein said sample holder is a rectangular plate.

22. (original) The apparatus of Claim 21 wherein said plate has a plurality of through holes formed thereon.

23. (original) The apparatus of Claim 22, wherein said sample receiving assembly comprises at least one clip for holding the sample to said sample holder.

24. (original) The apparatus of Claim 23, wherein at least one of said through holes receives a fastener for securing said clip to the sample holder.

25. (currently amended) An apparatus including a chuck assembly for holding a sample, and a reactor chamber, said apparatus comprising:

a shaft;

said chuck assembly comprising: a generally circular chuck member connected to said shaft, said shaft extending from a first surface of said chuck member, the chuck member having first fluid passages through the chuck member, the first fluid passages directing a fluid in a fluid flow through the chuck and toward the sample, the chuck member having second fluid passages through the chuck member, the second fluid passages directing the fluid away from the sample[[]]s and

a sample holder associated with a second surface of said chuck member, said second surface being opposite said first [[a]] surface, said sample holder being disposed to hold the sample with a predetermined surface of the sample in a predetermined orientation relative to said fluid flow directed by said chuck member toward the sample;

a reactor chamber for receiving said chuck assembly;

a spindle assembly for receiving an end of said shaft distal from said chuck member; and

a motor for rotating said spindle assembly and said shaft so that, when the shaft is rotated in one direction, said fluid in said chamber flows generally along said shaft in a first direction and through said [[openings]]first fluid passages in said chuck member around said sample holder, and then along a wall of said chamber in a second direction generally opposite to said first direction.